What is claimed is:

1. A method of converting a stem cell into a ventral neuron which comprises introducing into the stem cell a nucleic acid which expresses homeodomain transcription factor Nkx6.1 protein in the stem cell so as to thereby convert the stem cell into the ventral neuron.

2. The method of claim 1, wherein the nucleic acid introduced into the stem cell incorporates into the chromosomal DNA of the stem cell.

3. The method of claim 1, wherein the nucleic acid is introduced by transfection or transduction.

4. The method of claim 1, wherein the ventral neuron is a motor neuron, a V2 neuron or a V3 neuron.

5. A method of diagnosing a motor neuron degenerative disease in a subject which comprises:
a) obtaining a nucleic acid sample from the subject;
b) sequencing the nucleic acid sample; and
c) comparing the nucleic acid sequence of step b with a Nkx6.1 nucleic acid sequence from a subject without motor neuron degenerative disease, wherein a difference in the nucleic acid sequence of step (b) from the Nkx6.1 nucleic acid sequence from the subject without motor neuron degenerative disease

indicates that the subject has the motor neuron degenerative disease.

6. The method of claim 5, wherein the motor neuron degenerative disease is amyotrophic lateral sclerosis or spinal muscular atrophy.

7. A method of diagnosing a motor neuron degenerative disease in a subject which comprises:

a) obtaining a nucleic acid sample from the subject;

b) performing a restriction digest of the nucleic acid sample with a panel of restriction enzymes;

c) separating the resulting nucleic acid fragments by size fractionation;

d) hybridizing the resulting separated nucleic acid fragments with a nucleic acid probe(s) of at least 15 nucleotide capable of specifically hybridizing with a unique sequence included within the sequence of a nucleic acid molecule encoding a human Nkx6.1 protein, wherein the sequence of the nucleic acid probe is labeled with a detectable marker, and hybridization of the nucleic acid probe(s) with the separated nucleic acid fragments results in labeled probe-fragment bands;

d) detecting labeled probe-fragment bands, wherein the labeled probe-fragment bands have a band pattern specific to the nucleic acid of the subject; and

f) comparing the band pattern of the detected labeled probe-fragment bands of step d. with a

previously determined control sample, wherein the control sample has a unique band pattern specific to the nucleic acid of a subject having the motor neuron degenerative disease, wherein identity of the band pattern of the detected labeled primer fragment bands of step d to the control sample indicates that the subject has the motor neuron degenerative disease.

8. The method of claim 7, wherein the nucleic acid is DNA.

9. The method of claim 7, wherein the nucleic acid is RNA.

10. The method of claim 7, wherein the size fractionation in step 'c' is effected by a polyacrylamide or agarose gel.

11. The method of claim 7, wherein the detectable marker is radioactive isotope, enzyme, dye, biotin, a fluorescent label or a chemiluminescent label.

12. The method of claim 7, wherein the motor neuron degenerative disease is amyotrophic lateral sclerosis or spinal muscular atrophy.